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SPECIFIC AORTITIS.

By William D. Reid, M.D., Boston.

Syphilitic disease of the aorta has been found in 54 autopsies at the Massachusetts General Hospital, since the case of Jan. 28, 1909 in which the spirochetes were first demonstrated[1] in the aortic wall, and, up to August, 1919, there have been 105 patients treated for luetic aortitis in the out-patient department. I have already compiled a report[2] as regards results on the out-patient group and in this paper shall undertake a fuller discussion of the disease. For this purpose I have utilized the data from an analysis of both clinical and autopsy groups, from my own experience in examining a goodly number of cases in the past few years, and have freely drawn upon the recent literature. In making these studies I have been increasingly impressed with the lack of attention which has been paid to the subject of specific aortitis and with the need of strongly emphasizing its importance.

For the sake of clearness I shall group the material under definite headings.

Frequency. Specific aortitis has been found 54 times or in about 3.5 per cent. of the 1678 autopsies (Jan. 28, 1909 to July 31, 1919) at the Massachusetts General Hospital. In 40 of these cases aortitis was the primary cause of death, and in three of the fourteen remaining, in which this disease was listed as a secondary cause of death, the syphilitic process was advanced to a serious degree. Oberndorfer[3] reported syphilitic aortitis in 7 per cent. of 1437 autopsies, Gruber[4], of Strassburg, in 4.5 per cent. of 6000 case, while Marchand,[4] of Leipsig, in 256 post-mortems of syphilitics with the acquired form of the disease, found syphilis of the aorta in 211 (about 82 per cent.), and in 67.4 per cent. of autopsies on congenital cases. In a personal conversation R. D. Leonard, Boston radiologist, stated that in something over one hundred cases of bone syphilis examined at the Boston City Hospital, roentgen examination of the arch of the aorta disclosed evidence of aortitis in 75 to 85 per cent. Deneke[5] is of the opinion that, in adults, syphilis doubles the mortality of diseases of the circulatory system.

History. It seems best not to give more than a brief account of the history of the development of our knowledge of specific aortitis. To those interested in more detail I would refer to the article in Sir Clifford Allbutt's book,[4] and in fact this author's painstaking chapter on aortitis may be read *in toto* with profit.

Allbutt quotes Lancisi[8] in 1724 as associating "aneurysma Gallicum" with "impure coitus" and signs of syphilis elsewhere in the body. In 1866 Wagner[9] contributed an accurate macroscopic study but the disease was still confused with atheroma until Dohle,[9] in 1885, wrote his description of the gross and minute appearance of disease of the aorta in a young man with unmistakable syphilis. It is to the English physician, F.H. Welch, that Allbutt gives the credit of establishing our full knowledge of specific aortitis. Welch read his paper[10] in 1875 upon 117 cases of "fibroid aortitis," in 46 per cent. of which there was a clear record of syphilis.

The spirochete in the aortic wall was first demonstrated in 1906 and 1907 by three European observers, Reuta,[11] Benda[12] and Schmorl,[13] and in 1909 Wright and Richardson[1] recorded the first cases in America. In 1914 Cabot,[14] in proposing a new classification of cardiac disease, suggested "syphilitic" as one group. And in 1916 Warthin[15] published his startling paper in which he reported that in the pathological service of the University of Michigan, from 1912 to 1914, one third of all the autopsy cases on adults (41 in all) showed active syphilis on microscopic examination, and in 88 per cent. of these there were syphilitic lesions in the heart.

Etiology. It is clearly pointed out by Allbutt and others that all cases of aortitis are not necessarily syphilitic in origin. At the Massachusetts General Hospital streptococcus endocarditis comes next to syphilis. In infectious diseases and even in the course of the milder exanthemata, aortitis may occur, though perhaps in the majority of cases it is evidenced by no telling symptoms.[4] The recent literature on non-specific aortitis is considerable. Smallpox, measles, pneumonia, diphtheria (due to the toxin) and influenza are cited as causes. Simnitsky,[16] of Prague, who worked with Chiari, estimates that aortitis occurs in half the fatal cases of scarlet fever. Wiesel[17] warns the pathologist that in these diseases microscopic evidence of aortitis is often found where to the naked eye the vessel seems normal. In a recent article on "Non-Specific Aortitis" S. E. Bailey[18] writes that there exists many small dilatations and aneurysms which are clinically unrecognizable for many years.

W. G. MacCallum,[19] in discussing the problem of aortic regurgitation, which is intimately associated with the problem of aortitis, expresses the opinion that the valvular insufficiency is most commonly due to syphilis and part of the aortic process. And on aneurysm the same authority writes: "The character of the syphilitic disease of the arterial wall, which is so preëminently calculated to weaken it in the presence of strong blood pressure, makes it seem probable that more accurate methods of investigation will show the participation of that disease in a very large proportion of the cases, if not in all."

It has been already shown above how in 1906 and 1907 Reuta, Benda, and Schmorl demonstrated the presence of the treponemata in the aortic lesions in adult aortitis, their reports being closely followed by that of Wright and Richardson in 1909. In 1913 Loncope,[20] who has devoted considerable attention to luetic aortitis, asserted that the spirochetes are not constantly demonstrable in such lesions by any known methods, but Warthin,[21] who reports the finding of the spirochetes in seventy-five cases, states that at times much time and patience are required for success. In acquired syphilis he finds them only in the perivascular infiltration in the adventitia, and present in every stage up to nearly complete healing, but never present in the dense fibroid areas. In "our"* cases the spirochetes were demonstrated in 11 of the 41 cases in which search was made.

In 1905 Wiesner[22] recorded the finding of aortitis in cases of congenital syphilis, and in 1907 Rach and Wiesner[23] reported the presence of the spirochetes in the aortic walls of a large number of syphilitic fetuses examined. Klotz[24] completed the story by describing aortic lesions, practically identical with those in the acquired disease, in a case of congenital lues.

Period, or the interval between the syphilitic infection and the appearance of the aortic lesion. The limits of the period are, perhaps, wider than are generally appreciated; in "our"* out-patient group[2] the shortest period between infection and symptoms (not lesion) was 6 months and the longest was 33 years. I have recently examined a man who developed a chancre in June, 1919; there were symptoms of aortic involvement in August, and in September, when I first saw him, there was sufficient evidence (increased supracardiac dulness with soft systolic murmur transmitted outward, etc.) on which to make a positive diagnosis. Harlow Brooks, of New York,[25] states that serious involvement of the heart may begin before or with the secondary stage of syphilis. He reported a case in which death resulted from a minute perforation of the aorta just above the valve before the secondary rash had fully appeared and the diagnosis been made. Moore,[7] too, believes that syphilis attacks the heart earlier than is generally thought, and even as early as the appearance of the secondaries. Frankel[26] puts the lower limits as "very early" and Osler[4] cites the case of a man, aet. 36, in which aneurysm of one coronary appeared only 18 months after the chancre. Allbutt points out that because of the latency of the early cases it is very difficult to estimate the period between the primary infection and the involvement of the aortic wall. Sixteen years was the average period between infection and symptoms in the cases treated at the Massachusetts General Hospital,[2] which is in agreement with the figures 10 to 20 years found in the literature. I believe that more frequently one will find the period to be ten or more years, but the point I wish to emphasize is that the period may be much shorter and that one must not abandon a diagnosis of specific aortitis on the ground of too short an interval since the primary lesion.

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* I use the term "our" as being the simplest term by which to refer to the Massachusetts General Hospital cases, of which hospital I am a member of the out-patient staff.

Sex. Allbutt gives men the preponderance of three to one over women. In "our" out-patient cases there were but 5 women to 56 men, but in the autopsy group, undoubtedly a safer source on which to base any conclusions, the figures were 40 men and 14 women, or about 3 to 1, as Allbutt states.

Age. As Allbutt well says: "Syphilis of the aorta mars and kills in the prime of life." Thirty-five to 50 years are perhaps those in which the disease most frequently appears. Forty-four years was the average age in "our" out-patient cases, the age limits being 21 to 73 years. One of the autopsy cases was a boy, aet. but 18 years. Osler in his Schorstein Lecture[27] makes mention of two cases occurring at 21 years of age. Congenital cases are not infrequent at the age of 15 to 20 years[4] and are well known in syphilitic infants.

Occupation. In the experience of Allbutt laborious or athletic pursuits are important determinants. Apparently alcohol is unimportant, as the disease occurs in total abstainers.

Anatomy. Before proceeding I should like to draw attention to a few points on the normal anatomy of the aortic arch. Piersol[28] describes the aorta thus: "At its origin the aortic arch presents three rounded swellings, one anterior and the other postero-lateral, marking the position of the sinuses of Valsalva (sinus position of the sinuses of Valsalva (sinus aortae). The diameter of the ascending portion is about 2.7 cm. and that of the descending portion about 2 cm., the diminution appearing rather suddenly below the origin of the left subclavian artery and forming what has been termed the aortic isthmus. Where the ascending portion passes over into the transverse an enlargement of the diameter occurs which is especially well marked in older individuals, and is presumably due to the impact of the blood forced out of the ventricle by its contractions."

Morris[29] gives 2 to 2.25 inches (5.5 cm.) for the ascending aorta and about 4.5 cm. for the transverse part of the arch; Gray[30] places the figures at 28 mm. at the start; while Allbutt[4] states that in a young adult male the aorta measures 5 to 7 cm., and 8 cm. if over 50 years, and rather less in the female sex. When the arch is dilated Morris estimates that the most prominent part is about one quarter of an inch (6 mm.) from the sternum. This space is commonly filled in adults with a pad of areolar tissue and in infants the thymus gland is found there. An appreciation of this retromanubrial space is of importance in correctly interpreting the amount and meaning of supracardiac dulness in a given case.

In my brief search of the anatomical textbooks I have found considerable variation in the aortic measurements. In fact, Gray avoids giving measurements save the one quoted.[30] This leads me to call attention to the fact that there is no fixed type of heart and aorta; the heart fits the body. It may be short and rather wide with a relatively broad aortic shadow, and in another person, with a longer chest and a lower vascular tone; the x-ray may show a heart of the long type with a narrow aorta.[6] It is to the extensive development of roentgenography, undoubtedly, that we owe our present conception of the variation, in normal individuals, in the conflagration and measurements of the heart and aorta.

Pathology. In the records of "our" 54 autopsies there is much variation in tht extent of the pathological findings. As regards the part of the aorta affected,— the first part of the aorta was involved in all but three instances. Further analysis discloses that in 14 cases the disease was evident in only the first part of the aorta, in 14 more it extended to the transverse portion, in 15 the ascending, transverse and descending parts were involved, and in 4 it was continuous throughout the aorta. While it is true the ascending portion of the arch was affected in 94 per cent. of this series of postmortems, I note from the recorded descriptions that not infrequently the process was as extensive in the transverse portion as in the ascending limb, and sometimes more so. When occurring beyond the transverse arch the lesions usually much diminished in amount. In three instances the process was of the character of a band, 1 to 2 cm. in width, just above the valve, and extending ring-fashion round the aorta.

The pathological findings as regards the coronary arteries were as follows: normal, 27; few scattered plaques or slight fibrous sclerosis, 15; orifices reduced in size, 8, in two of which there were a few fibrous plaques in addition, and complete sealing over of one orifice in 4 cases. Of these latter the right coronary orifice was closed in 3 instances to one for the left. I note that Warthin[21] states that in his experience any marked involvement of the large branches of the coronaries, even in cases with anginoid symptoms, was a rare occurrence. This is the more important in conjunction with his assertion that all cases of angina pectoris are syphilitic.

The aortic valve was affected in 41 instances, in 14 of which insufficiency was demonstrable and in a single instance definite stenosis. The pathological description of the process was: slight to moderate fibrous thickening in 35 cases, of which 2 showed some wrinkling, calcareous in 3; and in 6 instances there was extensive fibrous thickening with much wrinkling in 3 of the latter. The base of the aortic cusps was adherent to the contiguous part of the aortic wall in 9 of these autopsies. As regards this last group of 9 cases my first impression was that here was the natural explanation of the frequent development of the regurgitation through the valve, but the autopsy protocols show that insufficiency was demonstrable in but 4 of these adherent cases and in 10 instances the valve was insufficient though the cusps were not bound down. Clinically, aortic regurgitation was present in all 9 with adherent valves, in the 10 other cases demonstrated by the pathologist, and in 2 additional instances. Therefore, it seems reasonable to assume that in most cases the regurgitation is caused by yielding of the aortic ring.

Definite aortic stenosis was found in one case. This is important, as I believe from the literature that the presence of stenosis of the aortic valve is felt to be contrary to syphilitic involvement of the aorta. In fact Mix goes so far as to say: "There is absolutely no such thing as syphilitic aortic stenosis. It is wholly contrary to the law of syphilitic pathology."[31] Believing, therefore, that this case of stenosis is of importance in establishing our diagnostic criteria of specific aortitis, I shall cite those parts of the case history that bear on the problem.

Woman, aged 42, married.

Family history. Two children living and well, one died in infancy.

Past history. Measles, mumps, and scarlet fever as a child.

Present illness. In November, 1908, had an attack of anginoid pain over the heart and radiating to the left arm. Attack so severe that the patient fainted. There has been a dull pain in the same area ever since.

Physical examination. Cyanosis. Heart enlarged to left of nipple and to sixth intercostal space. Systolic murmur at apex transmitted a short distance into axilla. A harsher, rougher systolic murmur at the aortic area and transmitted a short distance into the neck. Aortic second sound louder than the pulmonic second. Pulse poor volume and tension, suggestion of plateau in type.

Patient in poor condition on entrance into hospital and was immediately placed on the dangerous list. Died suddenly 24 hours later.

Autopsy No. 2371, May 1, 1909. Mitral valve normal.

Aortic valve *in situ* barely admits tip of little finger. Its circumference is 5.5 cm. The cusps of the aortic valve show considerable irregular thickening with wrinkling and deformity. On one cusp the thickening is distinctly nodular in character and the surface of this thickening is rough and granular. The cusps are so deformed that the openings of the coronary arteries are hidden.

Aorta. For 10 cm. above the aortic valve the wall of the aorta is irregularly thickened and shows on its surface irregular, small nodules with wrinkling and some puckering. The process is continuous with that on the aortic valve. These thickenings are yellowish in color and on section show a thickened yellow area in the wall apparently largely involving the media and the intima. The aorta elsewhere shows a few fibrous plaques which are more marked near its bifurcation, but in general it is fairly smooth. The arch of the aorta measures 5.25 cm.; the thoracic aorta 4 cm.; and the abdominal aorta 3 cm.

Microscopic examination.

Aortic valve. Sections stained by Levaditi's silver method show much fibrous tissue with considerable necrosis. In the necrotic material many undoubted treponemata are found.

Wall of the aorta. No treponemata found.

Myocardium. In places there is degeneration of the muscle fibres and infiltration with polynuclear leucocytes.

As stenosis is so rare in syphilis and so common in streptococcic endocarditis (note the history of scarlet fever as a possible etiology), it is possible that this case is really an old streptococcemia with a syphilitic aortitis on top of it. I made this suggestion to Prof. Wright but he thought it rather far fetched and that we should accept the facts as they stood.

In their acuter stages, the syphilitic and many other infections of the aorta are not arteriosclerotic but inflammatory; they are, strictly speaking, aortitis.[4] Allbutt describes the process as at first more in the adventitia around the vasa vasorum, and soon involving the media. The intima is last to be affected. It shows thickening and a patchy proliferation of the subendothelial tissue. Elliott[6] emphasizes that the primary seat of the aortitis is along the course of the vasa vasorum, and points out that the prevalence of these vasa nutritia in even the small blood vessels of the cerebral circuit is the reason that endarteritis syphilitica is so common there. Around these vasa vasorum are found collections of plasma and lymphoid cells, and, in the more acute foci, the treponemata may be demonstrated by the Levaditi silver impregnation method.[4] A definite gumma, such as occurs in the heart or liver, is rare. There may be large areas of healing by scar, and in fact the thickening of the intima makes that coat stronger than before. It is pointed out by Hirschfelder[32] and other writers that it is the irregular distribution of the fibrosis and the necrosis, *i.e.*, of the reparative and the destructive changes, which gives the irregular puckered appearance to the aortic wall in cases of advanced aortitis. Elliott contrasts the absence of calcification in the luetic lesion with its prevalence in arteriosclerosis. Warthin[21] emphasizes that the pathological diagnosis of syphilis is essentially microscopic as to the naked eye the tissues may appear sound.

The seat of the mischief is in the suprasigmoid area. In its first stage, a single cushion less than the size of a ten cent piece is a matter of the gravest import, because it threatens vital limbs of the arterial system—the aortic valve and, at their orifices, the coronary arteries.[4] Sir Clifford Allbutt has pointed out the frequency of incipient syphilitic infection of the aorta in angina pectoris in the following words: "Of all the infections the most active, definite, and frequent cause of angina pectoris is syphilis."[4] The same authority notes that the pulmonary artery does not always escape and occasionally the mouths of the side vessels may be blocked but the process rarely extends far into them.

When the process has caused the aorta to dilate considerably it is often a matter of personal choice with the examiner whether he employ the term syphilitic aortitis with dilatation or syphilitic aortitis with aneurysm. I believe the tendency is to agree with Mix[31] that there is no hard and fast line between the two conditions.

Of aortitis of non-specific origin just a word. Klotz[33] is authority for the statement that in rheumatic aortitis the media is involved but the histological picture is not the same as in lues. I shall not attempt further to discuss the pathology of the aortitis occurring in non-specific infections, save to agree with Elliott[6] that the rheumatic form is commonly associated with endocarditis and manifests the tendency common to all infective secondaries to undergo spontaneous healing as the primary cause subsides.

In recent years there has been an appreciation of the fact that coincident with the syphilitic lesion in the aorta the heart proper is often involved. Warthin, of the University of Michigan, is the foremost of those advocating this feature of syphilis of the vascular system. In a study of 50 cases by Brooks[25] the epicardium or visceral pericardium was diseased in 28, the myocardium in 44, and there was a true gumma in five. Moore[7] holds that the process is usually a myocarditis and may be recognized microscopically. From Warthin's studies[15] it is to be inferred that in a case of specific disease of the aorta the heart is also involved and, contrary to the general impression, the cardiac lesion is not necessarily incidental to the aortitis. In line with this one often notes, from a clinical standpoint, poor myocardial function often anticipating or out of proportion to the involvement of the aortic valve.

Symptoms. Allbutt believes that specific aortitis is far more frequent than we are wont to realize and is for the most part insidious.[4] He would divide the cases into acute or chronic, according as the symptoms differed, or rather in respect to intensity, *i.e.*, from a course wholly latent,* to a more or less transitory stenocardia. to a fuller angina, or to the racking angina of the *status anginosus*. Tides of activity may occur.[4]

Pain. If there be symptoms, pain is prominent. It varies from a sense of tightness about the upper sternum to the utter torture of severe angina. It may come in attacks, be associated with exertion or be present almost continuously. In "our" out-patient cases it was most commonly termed "sub-sternal pain," but at times it was described: precordial, under lower part of the sternum, in chest, to left shoulder, in chest and right arm, in left chest and back, in chest, shoulders, and to arms, and in arms and hand.

Superficial internal aortitis of the arch, even when acute, is unattended with pain, or, if some pain be complained of, it receives little attention; in the aortitis of the infections pain is frequently, in some of them generally, absent. In syphilitic aortitis it is more frequent;[4] whereas in atheroma, cases with pain are a small minority.

Shortness of breath was present in two-thirds of our cases.[2] Mix puts it well when he writes: "A sudden dyspnea associated with a rapid heart action in a man in the forties ought always to raise in the examiner a suspicion of specific origin."[31]

Fever is said by Fontain[9] to be common. Its type, he says, is that of sepsis or atypical typhoid, and it has marked remissions. Allbutt,[4] on the other hand, writes that it is hard to find definite records of fever, but that it occurs at times. In our autopsy group of cases fever unexplained by other causes, such as acute lung pathology, septicemia, etc., was present in but six instances, in only three of which did it exceed 100° F. The maximum was 102° F. and the type was irregular or "septic." The amount of aortitis present in these six cases varied from moderate to advanced.

Pressure symptoms occur as late complications. A rather strident "whistling respiration" on exertion, while by no means an initial sign, may yet long precede other respiratory signs as a symptom of pressure.[4] Elliott[6] points out that the direction in which pressure is exerted by an aneurysm and the rapidity with which dilatation occurs and grows are undoubtedly determining factors in the production or absence of symptoms. The same author reports a case, without symptoms, in which an aneurysm caused complete collapse of the upper lobe of the right lung and that this condition was only discovered as a result of a routine roentgenographic examination. A similar case has been found at the Massachusetts General Hospital.

In an analysis of 61 out-patient cases[2] I found symptoms as follows: shortness of breath, pain in the chest, or both, was present in all, shortness of breath in 43, substernal pain in 32, cough in 15, palpitation in 9, and weakness in 6.

Physical Signs may, perhaps, best be considered under inspection, palpation, percussion, and auscultation.

Inspection is of value only in advanced cases, when it may lead us to infer that an aortitis is present. Thus, a visible throbbing of the carotids suggests insufficiency of the aortic valve which we know to be luetic in origin in most cases in adults. A visible pulsation in the suprasternal notch may mean a dilated arch. Again any visible pulsation in the second or third intercostal space near the sternum suggests aneurysm. Cabot[34] emphasizes that a pulsation, if present, may best be detected by looking across the chest with examiner's eyes on a level with the chest. Enlargement of the cervical veins may be noted but should not be expected save in cases complicated by aneurysm and with other signs of pressure.

Palpation. Except in thin elderly people with degenerated vessels the aortic arch is not often to be felt in the supramanubrial notch. It commonly lies 2 to 2.5 cm. below and under some fat and layers of connective tissue. It may be palpable in persons wasted, or neurotic with atonic vessels, in the subjects of Graves' disease, for example, or when, as in high pressure cases, the heart is hypertrophic.[4] In interpreting the value of the palpability, in a given case, of the arch in the supramanubrial notch it is important first to determine the heighth of the diaphragm. In acute cases the arch may be tender to touch.[4] Palpability of the arch of the aorta is, at best, not a particularly reliable sign as it is not always present and occurs also in arteriosclerosis and in some other non-specific conditions.

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* Eleven of the autopsy group of cases were without symptoms suggestive of aortic disease.

The subclavian sign of Faure, Gerhardt, von Schrotter[35] and others is only occasionally useful. When the aorta is stretched and twisted, the subclavian artery, as the patient depresses his right shoulder, may be thrown up in the supraclavicular notch.

Undue mobility of the cardiac apex in patients having an elongated aorta has been pointed out by Traube.[4] These latter two signs, if positive, in my opinion, have merely some confirmatory value.

Percussion. The supracardiac dulness is most marked in the midmanubrium and commonly the dulness is greater to the right than to the left. The sense of resistance is the best guide. I have found of assistance the bent finger method of percussion as recommended by Plesch,[36] sometimes called the threshold percussion of Goldscheider. It is said that a corresponding area of dulness may be detected at the third to fourth dorsal spines.[4]

Auscultation. Allbutt gives weight to a change in the quality of the second sound as heard in the aortic area. He uses the term "tympanic second sound" to describe the quality of sound which Potain compared to the tabourka, an Algerian drum made of an earthen pot with a skin stretched over its mouth. Allbutt believes this quality is imparted to the second sound due to the muffling of the walls of the ascending aorta. In arteriosclerosis quite a similar sound may be present.

In the cases in which the process has extended to the aortic valve the systolic murmur of aortic roughening or the diastolic of regurgitation may be present. Thus in our out-patient cases[2] (those in which the diagnosis was beyond reasonable question were selected for analysis) one or both murmurs were present in each case. A systolic thrill may or may not be present. In the early stages there may be a remarkable intermittency in the regurgitation where the latter is dependent more on a relaxation of the aortic ring.[4] I have noted that one often must listen with extreme care in order to pick up the fine type of murmur which may be among the early physical signs. The most favorable time is after full expiration and with the patient in the erect or leaning forward posture, as recently so well emphasized by Pardee.[37] Sometimes exercise may intensify the murmur. As pointed out by Austin Flint[38] and others, those who do not use the large diaphragm of the Bowles' stethoscope will occasionally pick up a regurgitant murmur only by listening with the ear applied directly to the chest. The aortic direct murmur is more commonly soft but may, in other cases, be loud and rough. True aortic stenosis with its *pulsus tardus, parvus et rarus* may occur (See case report under the discussion of pathology).

It is not infrequent to find murmurs at the apex due in most cases, if the diagnosis of aortitis be correct, to a relative insufficiency of the mitral valve. The frequent presence of syphilitic myocarditis, as demonstrated by Warthin,[15] and the occurrence in some cases of insufficiency of the aortic orifice furnishes ample reason for the relaxation of the mitral ring. I would especially emphasize here the danger of mistaking, in aortitis with regurgitation through the aortic valve, the presystolic murmur of Austin Flint and the systolic of relative mitral insufficiency for the murmurs of organic mitral stenosis and regurgitation. On this point I shall have more to say when discussing the differential diagnosis.

Blood Pressure. The systolic pressure, according to Oberndorfer,[3] is usually normal unless the valve is damaged. It is the opinion of Allbutt that ordinarily the blood pressure is not raised. In my studies of the records of hospital cases and in personal examination of patients there was nothing characteristic in blood pressure readings in specific aortitis. Thus, in cases not complicated by aortic regurgitation the systolic pressure ranged 110 to 160 and the diastolic from 50 to 95. One pressure of 240 was present in a patient suffering from arteriosclerotic nephritis, and another of 195 was a single record obtained in a man aged 62 and a victim of marked arteriosclerosis.

Other physical signs may be present according to the degree of luetic aortitis and the presence of complications. In the 61 out-patient cases analyzed,[2] the physical signs and the frequency thereof were as follows: Diastolic murmur, 23; diastolic and systolic, 20; a systolic at the aortic area, 19; systolic at the aortic area and at the apex, 7; systolic at the apex, 2; heart enlarged to the left, 29; to the sixth space, 16; Corrigan pulse, 9; systolic thrill at the aortic area and transmitted to the neck, 2; pulsus alternans, 2; cardiac compensation badly broken, 4.

To support our diagnoses one has recourse to the Wassermann reaction and to roentgenographic examination. I shall therefore consider them next.

Wassermann Reaction. As in other forms of syphilis the Wassermann reaction has been found to vary from strongly positive to negative. Delafield and Prudden, in the latest edition of their book place the test as positive in all but 5 per cent. of the cases of specific aortitis.[39] In 36 cases of aortic disease Cummer and Dexter[40] reported a positive reaction in 27, or 75 per cent.; and Longcope[20] in 35 (or 74.5 per cent.) of 47 cases. The latter author, in summing up the percentage of positive Wassermann reaction, gives the figures as: from 25 to 68 in general cardiovascular disease, from 75 to 80 in aortic insufficiency, from 85 to 95 in aneurysm, and 75 to 88 in aortic disease in general.[20]

But I should like more especially to draw attention to the frequency of a negative response to the Wassermann test and to the interpretation which should be placed on the absence of a positive reaction in the diagnosis of syphilis of the aorta. Elliott, of Chicago, states that, in his experience, it is not uncommon in late syphilitic developments, such as tabes, aortitis and myocardial disturbance, to obtain a negative Wassermann reaction. Mix[31] points out that Warthin has demonstrated the spirochetes either in the myocardium or aorta in individuals who during life had a negative Wassermann reaction. The margin of error has been placed as high as 40 per cent.[6] and will lead us astray if we dismiss the idea of syphilis on a negative laboratory report. Elliott reiterates the impression of the better part of the profession in urging that we should all be a little more tenacious in upholding our clinical diagnosis when we find it opposed by laboratory reports.

(To be continued.)

RENAL CALCULUS WITH NEGATIVE X-RAY FINDINGS.

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IT is still not generally recognized by many practitioners that a negative radiogram is insufficient evidence of the absence of calculus in any part of the genitourinary tract. From a careful study of statistics of urinary lithiasis, it is evident that the lower a stone is situated in the urinary tract, the greater are the chances of its being missed roentgenographically. Thus, in renal stone, competent observers have agreed that calculi fail to show in from 6% to 15% of the cases[1]; in ureteral stone the percentage is higher, from 15% to 30%,[2] whereas in vesical stone more than 60% of the calculi fail to cast shadows.[3] Hunner[4] has aptly remarked in a recent publication, "a negative x-ray means nothing, but often proves worse than useless, because it stops further investigation of the urinary tract." Recently, within a period of a few months, four cases of renal stone with negative x-ray findings were observed. The chemical analysis of the stones showed that they were composed, chiefly, of ammonium urates. Interesting is the fact that in two of the patients the stones were latent, causing no symptoms referable to the diseased kidney; and were discovered at post mortem examination.

CASE 1. J. W. Male. Age, 48 years. Admitted to Mt. Sinai Hospital August 13, 1918. Patient's general condition poor. History of dysuria, pyuria, and hematuria of three weeks' duration. Two years ago a similar attack; on a few occasions had left lumbar pain, non-radiating. On the day of admission patient had an attack of retention of urine. On catheterization, an obstruction was encountered due to an impacted stone in the pendulous urethra, four inches from the meatus. Unsuccessful attempts were made to remove the stone with an alligator forceps. The calculus was finally forced backward into the bladder with a catheter and twenty ounces of urine evacuated. Radiography demonstrated a small shadow in the pelvis; evidently the calculus, which had been pushed back into the bladder. X-rays of kidneys and ureters negative for stone; the left kidney shadow was enlarged. The patient was not obese and the radiograms were very clear. Following the attempts at removing the urethral stone, urinary extravasation involving the penis, scrotum, and perineum quickly developed, and despite the fact that these regions were widely incised and drained, the patient's condition rapidly became worse, uraemic manifestations developed, and death followed the next day.

Post mortem examination revealed an atrophied right kidney, the organ being about one-third its normal size. This kidney, which never produced symptoms, contained a large branching calculus filling the pelvis and calices. The left kidney was twice its normal size and the seat of numerous abscesses. Six stones, each the size of a small cherry, were found in the pelvis and calices.

Chemical Examination of Calculi. Chiefly ammonium urates; traces of magnesium phosphate and calcium carbonate.

Summary. A patient admitted with urinary retention, due to an impacted stone in the urethra; urinary extravasation caused by attempts at removing same; uraemic, exitus.

Findings. Atrophied right kidney with large branching calculus (latent kidney stone) multiple left renal calculi. Chief ingredient of stones, urates; negative radiograms.

CASE 2. M. P. Male. Age, 53 years. Admitted to Mt. Sinai Hospital September 11, 1918, with a history of anuria of three days duration. Three years previously had an attack of right lumbar pain, a month later similar attack on left side. Patient has been well since, until three days ago, when anuria first developed, and complained of headaches, nausea, and pain in right lumbar region.

Physical Examination. General condition is good; patient is perfectly rational, the tongue is dry and coated, the breath uraemic. No costo-vertebral or abdominal tenderness. Blood pressure 165. Twenty-five c.c. of light amber urine obtained per catheter. Urine contained many pus cells, with a trace of albumen. The day following admission, patient voided sixty ounces of urine and felt considerably better. Cystoscopic examination showed an inflamed bladder, with normal ureteral orifices: no obstruction encountered in either ureter. Slightly turbid urine was obtained from the right kidney. Indigo carmine appeared in slight concentration in twelve minutes. The left side yielded blood-tinged urine with no indigo carmine. Pus and red blood cells were found in both specimens. Phenosulphonephthalein output 21% in three hours.

X-ray Examination. "In region of left kidney there is a small shadow, size of a cherry pit, which may be a concretion; no shadows in right kidney or ureter region." Patient remained well until three days later, when temperature rose from normal to 105°, anuria again developed. Two drams of urine obtained by catheterization in twelve hours.

Cystoscopic Examination. Normal bladder; ureters catheterized, no obstructions encountered; no secretion from either side. The only positive physical finding at the time was slight costo-vertebral tenderness on right side. Blood chemical examination showed marked retention, urea 59 mgm. and creatinin 6.8 mgms. per 100 c.c. of blood. The right kidney was explored and found considerably enlarged and studded with miliary subcapsular abscesses. A decapsulation and nephrotomy was done. Following the operation, the patient's condition rapidly became worse and death followed the next day.

Post Mortem Examination. Right kidney enlarged and shows a well-marked pyelonephritis. The pelvis contained four large stones about the size of cherries, with a number of smaller pea-sized calculi in the calices. Along the course of the right ureter, which was considerably thickened, there were found twenty small calculi, each the size of a pea. The left kidney, one-third of its normal size, contained several small calculi. Death due to renal insufficiency with pyelonephritis. Chemical examination of calculi; ammonium urates, traces of calcium and magnesium phosphates.

Summary. A patient with anuria, spontaneously relieved. Cystoscopy demonstrated evidences of bilateral renal involvement. Second attack of anuria; operation; death. Numerous calculi found in both kidneys, also along course of right ureter, although urethral catheter was passed into pelvis on this side without encountering any obstruction. Stones from both kidneys uratic. Right kidney enlarged and pyelonephritic. Negative x-ray findings; other side positive shadow; atrophic kidney.

CASE 3. D. K. Female. Age, 55 years. Admitted to Mt. Sinai Hospital December 19, 1918. History of anuria of two days' duration, with uraemic manifestations. Prior to this had pain in right lumbar region for three months, accompanied by hematuria and pyuria.

Physical Examination showed a middle-aged woman; attacks of restlessness alternating with drowsiness. The right kidney was enlarged and tender. X-ray examination of urinary tract negative. The patient's condition rapidly became worse, despite the fact that ten ounces of urine were voided the day following admission. The restlessness became so marked that cystoscopy could not be performed. The right kidney was explored and found markedly enlarged. There was considerable retention of purulent urine in the pelvis, and two small calculi were removed through a nephrotomy incision; drainage of kidney. Condition improved for three days; on the fourth uraemia again developed, followed by death.

Post Mortem Findings. Large right kidney containing several abscesses; two large stones in ureter just below uretero-pelvic junction;

one in upper calyx. The left kidney, which was the site of the inflammatory process, contained two calculi in the lower pole. Stones composed chiefly of ammonium urates.

Summary. A patient with uraemic manifestations; negative x-rays. Bilateral diseased kidneys with calculi. Latent stones on the left side.

Case 4. Male. Age, 31 years. Admitted to Mt. Sinai Hospital July, 1919. History of five weeks' duration of left lumbar pain, radiating to thigh, accompanied by urinary frequency.

Physical Examination negative. Kidneys not palpable. X-ray of urinary tract negative. Cystoscopy showed a normal bladder with normal ureteral orifices. Right ureter catheterized; clear urine; good indigo carmine in twelve minutes. Obstruction encountered in left ureter at 25 cm.; cloudy urine obtained with weak indigo carmine concentration in twenty minutes. A second x-ray was also negative; despite this fact, a tentative diagnosis of a calculus impacted at the uretero-pelvic junction was made. This was confirmed by passing a wax-tipped bougie, and obtaining positive scratch marks. Five days later the patient passed a smooth yellowish stone, the size of a large cherry pit. Analysis of the calculus showed it was composed chiefly of ammonium urates.

The question most naturally arises as to the cause of these radiographic failures, for as such we must necessarily class them. A number of years ago, poor radiographic technique was held responsible. With improvement along these lines, better results have been obtained. However, as shown by previously quoted statistics, quite a number of calculi are still missed. Obesity is a factor which must be considered; another is the chemical composition of the stone. It was formerly believed that the majority of renal calculi were composed chiefly of urates and uric acid. These concretions are translucent to the x-rays, and seldom throw shadows. All stones which failed to show in the radiogram were considered uric acid or uratic in origin. Recently it has been demonstrated by able chemists[5] that the majority of primary renal calculi are composed principally of calcium oxalate salts. Numerous instances have been reported in which phosphatic and oxalic stones failed to show in the radiogram, thus demonstrating causes other than the chemical composition, to account for the failures. Freyer,[6] a number of years ago, offered as an explanation, the theory that many stones are translucent to the x-rays when covered by an inflamed kidney, or by condensed fat, or when surrounded by pus. As proof, he cited the following: A patient with a palpable kidney mass x-rayed with negative results. At operation a large phosphatic calculus was found. The calculus removed, was then placed under the opposite healthy loin, which was radiographed, and the stone distinctly shows. A similar case was subjected to the same procedures with similar results. In both instances the kidneys containing the stones were enlarged and inflamed. Freyer, therefore, concluded that "certain inflamed kidneys hid stones by not obstructing the x-ray." In two cases of this series, the kidneys removed at post mortem were x-rayed with the stones placed *in situ* and distinct shadows were obtained; thus demonstrating that the calculi themselves were not translucent to the rays.

From this résumé, it is evident that there are a number of causes for negative radiograms. The subject is a complicated one and requires careful study to clear up the mooted points in question.

CONCLUSIONS.

These four cases serve to illustrate several interesting facts: 1, Negative radiographic findings in renal lithiasis are not infrequent, four such cases being observed within the period of a few months. 2, Latent kidney stones are also not uncommon; in two cases there were no symptoms referable to the side on which calculi were found. 3, The chemical analysis showed urates to be the predominating constituent in all four cases. 4, The passage of a ureteral catheter unobstructed into the pelvis of the kidney does not prove the absence of a ureteral calculus. 5, The wax-tipped bougie is of value; it will every now and then demonstrate the presence of a stone when other means fail. 6, Conservation should be the watchword in all operations upon the kidney. Nephrectomy should be practised as a last resort, for despite negative radiograms, and abseuce of symptoms, the opposite kidney may be the seat of calcareous disease.

ADDENDA SINCE PAPER WAS SENT FOR PUBLICATION

Case 5. Female. Age, 27. Admitted to Mt. Sinai Hospital, service of Dr. Beer, March 4, 1920. Family history, negative. Past history, negative. Present illness began five months ago with dull pain in right lumbar region, non-radiating. Frequency of urination by day and night, no hematuria; chills and fever at onset, never passed calculi.

Physical Examination. Lower pole of right kidney palpable. Urine—moderate white blood cells, occasional red blood cell. Cystoscopy—normal bladder, diminished indigo-carmine secretion from right kidney; both urines clear macroscopically: moderate number of white blood cells, few red blood cells; urea 0.2%. Left kidney, occasional white blood cell; red blood cell; urea, 1.8%; x-ray examination of urinary tract on two occasions negative. Passage of wax tipped catheter into right renal pelvis, positive scratch marks obtained; this was verified by a second examination. Diagnosis—Right renal calculus. Operation (Dr. Beer)—Pyelotomy and nephrotomy for calculus. Large adherent kidney, with multiple subcapsular abscesses. Pelvis opened and several large calculi, covered with a fibrinous exudate were found in pelvis and calices. Decapsulation—nephrotomy and drainage. Patient did very well after the operation for three weeks, then had a severe attack of pyelonephritis, with chills and temperature as high as 105. This attack lasted five days and subsided without operative interference. Chemistry of stone—Calcium carbonate, ammonium urates, ammonium and magnesium phosphates.

Comment. It is very likely that the layer of fibrin which surrounded the calculi may have been responsible for the negative radiograms.

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OBSERVATIONS ON THE AGGLUTINATING TITRE OF THE BLOOD SERUM IN TYPHOID FEVER.

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INTRODUCTION.

THE diagnostic value of the agglutination reaction in typhoid fever has been of great service ever since its clinical application by Widal in 1896. Its quantitative determination from time to time during the course of the disease was done by Widal in 1897.[1] He told of a fatal case with high powers of agglutination, and he told of one case, with relapse, in which there appeared no agglutination during or following the disease. He concluded that the dilution in which the patient's serum is able to agglutinate typhoid bacilli is independent of the state of the patient's immunity. Cases in which the patient's serum fails to agglutinate at any time during or following the disease must be rare, and it is not unlikely that Widal was dealing with a paratyphoid in the above case. Others have concluded that the ability of the typhoid patient's serum to agglutinate the bacilli, while of great value in diagnosis, is of no value in prognosis[2].

To assume that the height of the agglutinating titre indicates the height of the patient's immunity is to forget that both of the factors, the disease and the patient, are subject to wide variations—not only in the individual case, but in the course of the disease of the individual. Nor is the formation of agglutinins by any means an index of the many known and unknown processes of active immunization going on in the case of typhoid fever. The existence of agglutinins in the serum indicates only the existence of past or present antigen, or the typhoid poison, in the individual. The concentration of demonstrable agglutinins, that is, the potency of the patient's serum in varying dilutions to agglutinate the typhoid bacilli, or the agglutinating titre as it is called, may indicate excess of agglutinins over antigen in the individual at the time the serum was withdrawn. With the idea that the concentration —the agglutinating titre—does indicate this excess, the following observed cases are of interest.

METHODS.

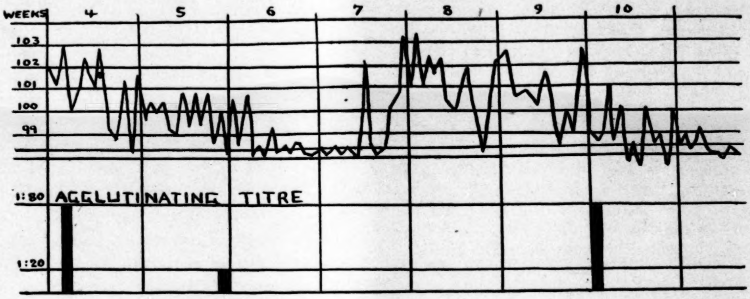
In a small series of comparisons the following differences between the macroscopic and the microscopic methods of testing the agglutinating titre were observed:

1. The macroscopic test is fully as simple as the microscopic, and requires no more time, although the final reading is obtained some hours later.

2. The macroscopic test is positive in lower dilutions than the microscopic—that is, it is not so delicate.

3. The macroscopic end-point is more definite and more constant than the microscopic.

All agglutinations recorded were done by the macroscopic method, using a salt solution suspension of typhoid bacilli, prepared in a way similar to that suggested by Zinsser[3]. The dilutions were made either with the capillary pipette or by the drop method. Except for these two methods of making the dilutions, all recorded agglutinations were done uniformly. They were placed in a water-bath between 37 and 40 degrees, Centigrade, for two hours, and then in the ice-box over night.



CASE 1.

CASES.

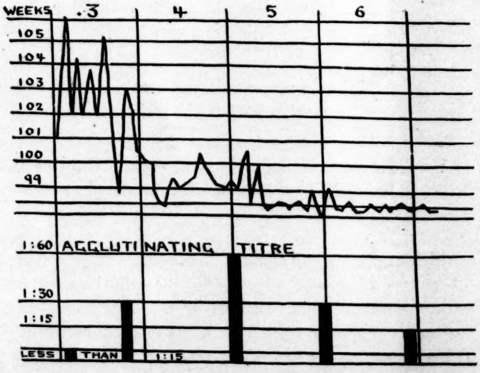
CASE 1. Patient entered hospital in fourth week of disease. A positive blood culture was not obtained, but a careful differential diagnosis, week by week, left no other clinical diagnosis than typhoid fever. On admission the serum agglutinated 1:80. At the end of the fifth week, before the temperature had steadied down to normal, the agglutinating titre had fallen to 1:20. Toward the end of the seventh week a very severe relapse appeared, and in the tenth week the agglutinating titre had again risen to 1:80. After the tenth week convalescence occurred without further complication.

CASE 2. Patient entered hospital in third week of disease. Diagnosis made by blood culture. The agglutinating titre less than 1:15 on admission rose to 1:30, then to 1:60 at the beginning of the fifth week. From this point it fell more gradually and convalescence was uninterrupted.

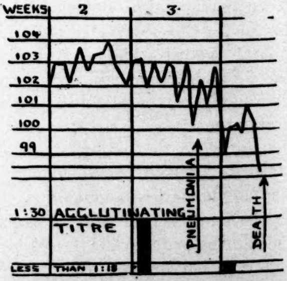
CASE 3. Patient entered hospital in second week of disease. Diagnosis by blood culture. One week later the serum agglutinated 1:30. Pneumonia and death followed shortly, the agglutinating titre dropping to less than 1:15 a few days before death. B. typhosus was obtained in culture from a post-mortem lung puncture.

CASE 4. Brother of Case 3, entered hospital in second week of disease. Diagnosis by blood culture. In the beginning of the third week the agglutinating titre was 1:15. Fever lasted to the end of the third week, when the agglutinating titre had risen to 1:30. Temperature then remained normal and convalescence was uneventful.

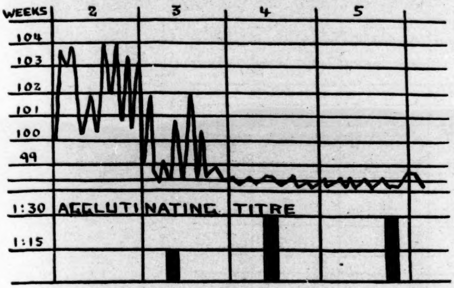
CASE 5. Patient entered hospital after one week of fever. Diagnosis by blood culture.



CASE 2.



CASE 3.



Case 4.

The hectic course of this case is best represented by the accompanying chart.

A high *white count* may occur during the initial septicaemia, and before the bacilli have established a focus in the bone marrow—for which tissue, among others, they have an elective affinity[4]. This is the explanation offered for the white count on admission—16,500. At the end of the fifth week it had fallen to 6,000.

Blood cultures were positive twice in the first week and again in the second week of the relapse. The second culture was positive at the same time that the serum agglutinated 1:60. This emphasizes the fact that the agglutinins, while specific, are not bactericidal for the typhoid bacilli. The bacilli take a purely passive part in the phenomenon of agglutination[3]

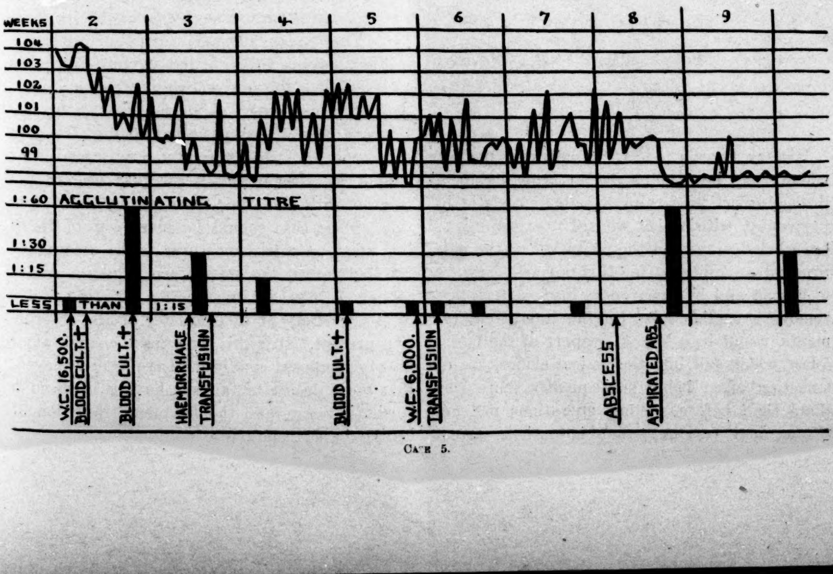
Agglutinations, except for the first one, were all made with a suspension of bacilli raised from the first blood culture. They therefore represent the action of the patient's serum on his own organisms. A fall in the agglutinating titre heralded the relapse. Throughout the relapse the titre was low—less than 1.15—and it rose only when recovery was close at hand.

Complications started in the third week with a severe haemorrhage from the bowel, which necessitated transfusion. In the fifth week, with the relapse at its height, and with a marked secondary anaemia, a second transfusion was done. The donor for the second transfusion was immunized with typhoid vaccine till his serum agglutinated 1:60, but it had little or no effect on the agglutinating titre of the patient's serum. Attempts to secure the use of convalescent typhoid patients for donor purposes were futile. In the eighth week an abscess of the fifth left costal cartilage formed. It was aspirated, and B. typhosus was cultured from it.

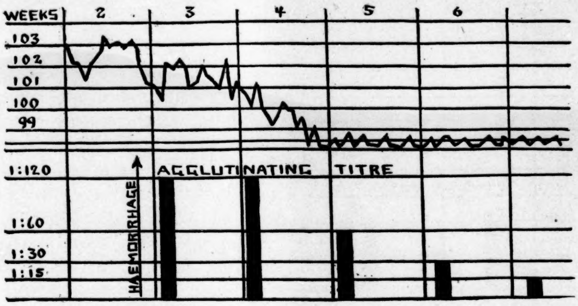
One might speculate as to whether or not this abscess acted as a sort of autogenous vaccine, hastening recovery and raising the agglutinating titre to 1:60 again, a week later.

This case illustrates the following axioms of diagnostic caution. A high white count at onset does not rule out typhoid fever. A negative agglutination late in the disease does not rule out typhoid fever.

Case 6. Patient entered hospital in the second week of disease. Diagnosis by blood culture. This patient also had the accident of



Case 5.



Case 6.

intestinal haemorrhage. He was an alcoholic type, which fact greatly increased the severity of the disease from a clinical standpoint. His agglutinating titre was 1:120 through the third and first part of the fourth week, after which improvement became very evident. The titre then gradually dropped off, and there was nothing remarkable about the convalescence.

SUMMARY.

Conclusions are not justified in this small series. In summary the most striking point is the relation between the clinical course of the disease and the changes in the agglutinating titre from week to week.

In cases 2 and 4 there were prompt recoveries, and in both the agglutinating titre rose to the point of defervescence.

In case 6, which was more severe probably because of alcoholism (haemorrhage being always a possible accident), the titre stayed at 1:120 till recovery was becoming quite evident.

In cases 1 and 5, which were both long and tedious, the titre dropped unmistakably before clinical recovery was at all apparent, and it rose again at or near the point of true recovery, some weeks later.

In case 3, which was complicated by pneumonia and ended by death, the titre fell from 1:30 to less than 1:15 before exodus.

In these cases, then, a fall in the agglutinating titre of the serum before clinical recovery was becoming evident, was a sign of poor prognosis.

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PROSTATECTOMY.

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(Concluded from page 47.)

History reveals to us the various methods which have been employed in attempts to relieve obstruction due to so-called prostatic hypertrophy, with which we are now dealing. I have briefly sketched the evolution of the chief procedures employed for this purpose, both per urethram and by open operation. Attempts to remove a median lobe, leaving lateral enlargements, result in a loss of support of the lateral lobes, which fall into the vesical orifice, the obstruction often being subsequently more complete than before. Blind operations per urethram, and various punch operations, are of little value where true hypertrophy is present. There are many early cases in which congestion plays a very important part, and when relieved little if any true hypertrophy is left, or, not infrequently, a fibrous prostate or contracture of the vesical neck remains. It is in this type of cases especially, and because we cannot be sure at first sight that we are not dealing with this type, that proper consideration of the case should be given before deciding upon operative measures. The amount of residual urine, the presence or absence of infection is not as important a deciding factor as is the study of of character of the obstruction present. It is this true tissue change, after all superimposed conditions have been removed, that must decide us, always having in mind a borderline case, and the frequent transition of benign hypertrophy into malignancy.

Given a true hypertrophy, a mechanical obstruction of the vesical neck which should be removed, how should the case be handled? Can we divide our cases into those which can be rushed through, in which we will expect no complications, and, on the other hand, those in which we expect complications? This has not been my experience, and apparently not that of others, as attested by the frequent change in views of operators regarding the technic in handling such cases.

True progress in the perfection of the technic in dealing with these cases during the past twenty years has been due largely to the combined efforts of urologists in this country and abroad. While the general surgeons have fallen in line to a greater or less extent and, especially when working in conjunction with the specialist, have, in some instances, obtained good results, still progress has been due to special investigations of those working in this field, and to attention to details before, during and after operation.

The work of Young[47] stands out prominently. His modification and perfection of the open perineal operation, notably that of Proust,[48] removing the prostate under sight, with a careful dissection of the perineum; lateral capsular incision; the use of a tractor; avoidance of the external sphincter muscle, bulb and triangular ligament, ejaculatory ducts and rectum; good drainage after operation; control of hemorrhage, and early mobility of the patient, have placed this method upon a new footing. Young's early statistics of 238 perineal prostatectomies with a mortality of 2.9 per cent., and 128 operations with no mortality, speak for his work. That this operation requires an intimate knowledge of the anatomy of the perineum, greater skill in operating does not allow for complete preoperative drainage, with its beneficial results, and that, in the hands of the average urologist, it will be attended by more complications than the suprapubic, there can be no question.

Freyer[49] reported 644 suprapubic prostatectomies with 39 deaths, a mortality of about 6 per cent.

Stillman[50] brought out the point of suprapubic drainage as a preliminary step to suprapubic prostatectomy. Bevan[51] called attention to the advantage of this step in the following words: "Nothing has been more satisfactory than the secondary prostatectomy ten days, two weeks, or three weeks later, when the patient was in good condition, the operation being performed without any instruments whatever, simply through the fistulous tract with a gloved finger, with the patient under nitrous oxide gas. If that method is adopted and badly infected cases first drained and prepared for prostatectomy, the suprapubic operation will have as little or less mortality than any other case, and the resulting cure will be more satisfactory and more complete."

The list of urologists adopting this method to a greater or less degree includes Pilcher, Cabot, Chetwood, Hagner, Kolischer, Gardner, Schmidt, and many others.

Pilcher[52] adopted this method as a routine, and has been followed in this respect by Gardner.[53]

My own experience covers but seventeen years, the first three years, observing and assisting in such prostatectomies as occurred in a general surgical service, and for fourteen years, in operating. My early prostatectomies, performed when the crystallizing stage of the evolution of prostatic surgery was not far advanced, were done by the blind perineal method of intraurethral enucleation. In a four-year experience in this operation, while in charge of an active general surgical service, although there were no deaths, and the operation was looked upon as not difficult, the good results were overshadowed by the few who are now doubtless still going about wearing a urinal and cursing their existence. This was followed by one-stage suprapubic operation, with occasional open perineal prostatectomies, and latterly by an infrequent open perineal operation, but all others by a suprapubic drainage followed by removal of the prostate when the patient's condition warranted it.

There have been 147 cases, with three deaths, but, as before stated, incontinence nearly as bad as a mortality characterized three of the perineal cases, a perineal fistula persisted in two, constriction of the vesical neck in two, nodules of prostate were left about the vesical neck in two. One death resulted in a one-step suprapubic prostatectomy from hemorrhage when a continuous irrigation was used, one from renal insufficiency, and one of the two-stage cases from uremia. From subsequent observations, this last case might have been saved had a longer time been allowed to elapse between operations.

I have treated by palliative measures a large number of prostatics whom others would have subjected to operation. These have been early or borderline cases — small hypertrophies, fibrous prostates, carcinoma, and those cases falling in the last group before mentioned, namely, when the obstruction is partial and due to a small amount of obstructing tissue. These cases have been treated by destroying the obstructing tissue by fulguration or removal with the intraurethral punch, using the Young modification of the Mercier instrument, with proper care of the individual to eliminate infection of the urinary stream.[54] Few of these cases have later come to radical operation.

However, from observation and from results obtained in the two-stage suprapubic prostatectomy, the real grasp one has upon the situation at all times, the possibility of progressing step by step, and the excellent results obtained, I now advise prostatectomy in some borderline cases which formerly I would have treated palliatively. I advise it as a radical cure for a condition which will probably progress, may become malignant, and is a constant menace to the patient, limiting his activities.

It is not my desire to advocate one operation for all cases, but I do believe that the suprapubic two-stage prostatectomy is the safest, is based on the best principles from the anatomical and physiological and pathological standpoint, involves fewer complications, and gives the best functional results of any method of procedure.

The arguments which have been advanced against primary suprapubic drainage are that it entails two operations; that sudden removal of bladder pressure in over-distended cases is dangerous; that infection of the abdominal wound and prevesical space takes place; that the resulting cicatrix interferes with the second operation, making it more difficult; that a fistula is more apt to result, and that it requires too much time.

Catheter drainage per urethram is offered by some as a substitute in some cases to be operated by the suprapubic route and as a routine in the perineal cases.

The first argument concerning the two operations can be answered by the fact that two minor operations, the first under local or gas-oxygen anesthesia, the second, on a much improved patient, under gas-oxygen, are to be preferred to one operation of longer duration, upon a patient in poor condition, where shock and hemorrhage are added to renal insufficiency which is sure to follow complete bladder drainage in varying degrees in every case.

If the psychic effect is not detrimental to the individual, local anesthesia, with an anodyne one hour before operation, will be sufficient for the bladder drainage. If the patient is nervous and excitable, gas and oxygen anesthesia is better. An incision is made through skin, subcutaneous tissue and fascia, the recti are separated and retracted, the peritoneal fold is elevated, the bladder drawn upward slightly, and a puncture wound made in the fundus of the bladder through which a large mushroom catheter is inserted on an introducer, lubricated so as to slip in easily. The mushroom end of this catheter immediately opens when released, the catheter, completely filling the opening in the bladder, is kept clamped off, and by pulling the mushroom up against the bladder wall leakage is prevented, thus it is not necessary to empty the bladder completely, overcoming the second argument against suprapubic drainage. A catgut suture in the bladder wall above and below the tube reinforces the tube in its position. It is not as important to have the bladder opening as high up on the fundus with preliminary drainage as when the operation is done in one stage, as the wound granulates more readily after the second operation. Thus the urethra is put at rest; the traumatism incident to catheterization is prevented; absorption from the irritation of an indwelling catheter is eliminated; congestion of the prostate and vesical neck is reduced; free drainage of the bladder is adjusted; back pressure upon the kidneys is removed; thus making it possible to flush the patient, to build him up, to reëstablish a kidney balance, which is always disturbed by the removal of back pressure. This disturbance is characterized by a reaction which varies from slight drowsiness, dry tongue, loss of appetite, flatulence, diminution in urinary output or increased output with diminished urea, to profound uremia. Under proper measures the principles involved being directed toward complete bodily elimination, the patient rapidly improves, and in some cases at the end of a week or ten days has attained an even keel which will be but slightly disturbed by the second operation.

The renal tests during this procedure are important and interesting. I refer to blood urea nitrogen content, phenosulphonephthalein output, total quantity of urine, and specific gravity. These tests are sufficiently accurate so that, when combined with the clinical picture, the patient's condition can be closely followed.

An increase of blood urea nitrogen, diminution of phthalein output and total urine, with lowered specific gravity, takes place at once after drainage of the bladder. A return of blood urea to 30 mil. or lower is desirable and an elevation of phthalein to 40 per cent. or over for two hours before the second operation. The maintenance of a new level even though not up to 40 per cent., is more important and favorable than wide variations in percentage.

To illustrate: A patient entered the hospital with an over-distended bladder and 30 ounces of residual urine. His blood urea was 32 mil., phthalein output 38 per cent. After drainage, the blood urea rose to 40 mil., and phthalein dropped below reading point. It took three months for this patient to strike a level when the urea remained at 22 mil. and phthalein from 37 to 41 per cent. Although the patient was profoundly uremic after the drainage and manifestly would have succumbed had shock been added, he passed through the prostatectomy without the slightest reaction and his bladder was closed at the end of seven days after the prostatectomy.

Nearly all prostatics have relapsing pyelonephritis. An exacerbation usually follows the bladder drainage, due to kidney congestion, adding to the reaction. At the Mayo Clinic, where the indwelling catheter is used for preliminary drainage, vaccines are administered during this period.[44] A slight infection of the wound in an occasional case may take place after drainage. If the bladder is irrigated previous to the operation and filled with an aseptic solution, the tube carefully inserted and held tightly in place, the abdominal wound closed with figure-of-eight silkworm gut sutures, a clean sinus will form, lined with granulations, the prevesical space does not become infected, and we have a walled-off area which will not become infected after the prostatectomy, and will heal more rapidly, than a fresh wound. Moreover, the urinary infection, both kidney and bladder, has been largely cleared up by the period of drainage with increased elimination and flushing, and the urine which later flows over this walled-off area is less infectious.

Increased difficulty and prolongation of the second operation, due to the presence of scar tissue, has been given as a contraindication to the preliminary drainage. When drainage has been maintained for a prolonged period, that is, over two weeks, a firmer wound is found about the sinus. When the tube is removed the sinus can be dilated, the skin and fascia cut sufficiently to admit two fingers into the bladder, and I have found this a complication of slight importance. Fresh tissues are not opened up.

The question of the length of time of operation is not important beyond certain limits. The first operation under a local anesthetic or gas-oxygen, free from shock of hemorrhage, does not have to be performed by the watch, and the patient is so much improved in condition at the time of the second operation that a few minutes more cause no harm. Spinal analgesia may be employed for the second operation.

The wound is opened as described above for the second operation. One finger is inserted into the urethral orifice and the prostatic lobes separate, the urethral mucous membrane tearing at the point of separation of the lobes. The finger is then gently swept around between the adenomatous mass and the prostatic capsule, freeing the tumor, assisted by an elevation of the prostate by the fingers of an assistant in the rectum, and the prostate is lifted out. Next to renal insufficiency, hemorrhage is the most important complication in prostatectomy. To allow a patient to ooze from an open wound is bad surgery. We would not allow it in other operations—why in this?

When a patient succumbs from shock or suppression following prostatectomy, it means hemorrhage or a further lowering of resistance from continuous bleeding in the presence of impaired elimination. The amount of bleeding at operation is not an indication of what we may later expect. Therefore we take the proper precaution in every case, and our results have substantiated the procedure. We use a Hagner bag or a Pilcher modification in all cases. This certainly controls the bleeding. The method is more satisfactory than (1) various methods of packing, the packing being difficult to maintain in position, painful to remove, and may cause secondary hemorrhage upon its removal; (2) suture of the capsule, which requires a much larger wound for sight and the consumption of more time at the operation; and (3) the use of a flap of tissue, which acts as an irritant and later suppurates. With no bleeding, and kidneys that have regained their function from preliminary drainage, we expect little reaction. A large tube which is inserted into the bladder after the removal of the prostate, can usually be removed twenty-four hours after the prostatectomy, for with a bladder which has cleared up by drainage and the absence of blood clots in the bladder which later disintegrate, the tube is no longer necessary. Traction on the bag is maintained up to twelve hours, when it is released, emptied, and allowed to remain in position, to be used again if bleeding takes place. We have not found this necessary. When the bag is removed twenty-four hours after the prostatectomy, which is easily done, and which has never, in our experience, been accompanied by secondary hemorrhage, a soft catheter is attached to the end of the tube on the bag and is drawn up into the bladder through the urethra. The catheter is carefully placed so as to drain the bladder, and can often be seen through the suprapubic wound lying in the bottom of the bladder. The silk suture by which the catheter is attached to the end of the tube in drawing it into position can be left long and brought out of the suprapubic wound, and retained for several days, making it possible to change the position of the catheter by pulling on the silk.

The skin of the abdomen is covered with a layer of boric acid ointment, a large piece of oiled silk is placed over this, held down by the ointment, an opening cut in the oiled silk over the wound and the wound packed with a strip of gauze, the outer end of the gauze lying in the oiled silk, where the dressings absorb the drainage, which is usually slight, the oiled silk being folded over the dressing, keeping the patient dry.

If a catheter is not inserted when the bag is removed, one is passed within the next two or three days. A bicoude or natural curve is first used, as it is important to use a catheter that will ride easily over the torn edge of the bladder wall at the vesical neck, otherwise the catheter will engage under the mucous membrane.

The urinary drainage in these cases that have had preliminary drainage and control of hemorrhage after operation is strikingly clearer than under the old one-step method of prostatectomy and before using the bag for the control of hemorrhage.

Following the operation the patient is placed upon fluids at once, also salines per rectum at frequent intervals.

After the removal of the tube the wound is dressed each day—packing carefully to the bottom of the wound, being sure that the bladder opening closes before the wound is allowed to heal externally. If this is done there will never be a fistula, for after the bladder closes, the wound rapidly fills with granulations, healing from the bottom, and is solid. If the bladder end of the wound does not close first, urine leaks into the opening and works its way out, reopening the sinus. These wounds, which are already surrounded by an area of repair and lined with granulations, heal more rapidly and firmly than when the operation is performed in one stage. The average time for closure is twelve days. The catheter is retained in the urethra for two days after the wound has stopped draining to ensure a tight closure.

Elevation of the scrotum throughout is important to prevent epididymitis.

We have the patients sit up in bed as soon as they feel able, but believe that the wound closes more rapidly if the patient does not move about before the drainage through the wound has ceased. We have had no cases of incontinence or fistula following this technic. The sexual power is apparently not impaired.

Perineal prostatectomy we would limit to suppurative prostates not permitting preliminary drainage, and prostatic calculi, and those few cases of malignancy which warrant operation, the malignancy starting in the posterior lobe not reached from above.

The points which I wish to emphasize are as follows:

1. The study of prostatic obstruction has been a slow evolution, extending back over two thousand years.

2. Not until it became possible to inspect the interior of the bladder were measures for its relief placed upon a definite footing.

3. With the advance in the study of cases, operative measures suggested during the period of obscurity were brought forward and perpetrated with renewed zeal.

4. Anatomical and pathological study of cases has resulted in a certain classification.

5. The objects of relief will best be attained by a thorough analysis of the individual, by procedures instituted to remove step by step, with the least possible shock to the patient, the causes of the symptoms, and that prostatectomy for fibro-adenomatous enlargement can best be accomplished by preliminary suprapubic drainage—the removal of the gland being an incident of the convalescence from the drainage. The most important phase in its removal is the control of hemorrhage, followed by a careful attention to details during the healing, insuring a rapid functional cure free from complications.

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Book Reviews.

An International System of Ophthalmic Practice. Edited by WALTER L. PYLE, A.M., M.D. *Medical Ophthalmology* by ARNOLD KNAPP, M.D., Professor of Ophthalmology, Columbia University; Surgeon Herman Knapp Memorial Eye Hospital. Philadelphia: P. Blakiston's Son & Co., 1919.

This well-made book of 480 pages of text aims to give the "relations of ophthalmology, closer or more remote, with every branch of medicine and surgery." The introductory anatomy of the nervous system connected with sight is in coöperation with Marburg of Vienna and is both comprehensive and compact. Next, diseases of the nervous system are taken up and this part is especially valuable. Then the remaining field of medicine and disease, as far as it may affect the eye, is reviewed with satisfactory thoroughness. An amazing amount of information is contained in the volume and arranged in such a way as to be of the utmost use. The last chapter takes up hereditary eye diseases. We shall not soon see a book to displace this one in its field.

The Refraction of the Eye. A Manual for Students. By GUSTAVUS HARTRIDGE, F.R.C.S., Consulting Surgeon to the Royal Westminster Ophthalmic Hospital; Ophthalmic Surgeon and Lecturer on Ophthalmic Surgery to the Westminster Hospital, etc. 110 Illustrations. 16th Edition. Philadelphia: P. Blakiston's Son & Co. 1919.

Of this valuable treatise 38,000 copies have been issued. It is well known to the student of ophthalmology and this new edition, while following the plan of previous ones, has been revised and many additions made. No more practical guide to the beginner in this field exists and a grateful generation of oculists might attest its value.

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"PTOMAINE POISONING" AGAIN REVEALED.

AN illuminating instance of the loose way in which the term "ptomaine poisoning" is still used occurred last month in Washington, D. C. Mrs. T., aged 44, suddenly took ill with a chill and fever, soon developed a petechial eruption, indefinite mental symptoms, and died in 18 hours. There were no indications of gastro-intestinal disturbance. The cause of death upon the death certificate was given as "botulism, or ptomaine poisoning." A pure culture of meningococcus from the spinal fluid was obtained by lumbar puncture as well as from the blood, and the case was therefore evidently a fulminating type of cerebrospinal fever. As soon as the bacteriological examination was completed, the death certificate was corrected by the attending physician. The day before Mrs. T. fell ill, her husband had a spell of nausea and vomiting, which was thought to be "ptomaine poisoning." The attack occurred about five hours after eating a dinner containing spinach. The matter vomited was greenish, which threw suspicion on the spinach. A statement was issued warning against spinach. Subsequent investigation makes it likely that the vomitus contained bile, especially in view of the fact that Mr. T. was subject to spells of this nature, having a chronic dyspepsia.

It is important to remember that in actual cases of food poisoning and food infection, the period of incubation may vary from four to forty hours. In other words, several meals may intervene between eating the food in question and the beginning of the attack. The food vomited may not be, therefore, the food responsible for the trouble. This mistake is common. It was made in the Detroit outbreak of botulism. In one of the cases of this outbreak the vomitus contained corn which was therefore incriminated at the time, whereas the trouble really came from ripe olives eaten the day before.

Now that "ptomaine poisoning" is going quite out of style, botulism is becoming the fashion. The symptom-complex of botulism is quite characteristic. The poison is a neurotoxin, and the symptoms are almost all referable to injury of the nervous system. The mind remains clear; there is no fever; symptoms of gastro-intestinal irritation are absent or slight; in fact, obstinate constipation is the rule. Nausea and vomiting may occur, but always as an early manifestation, which soon passes away. Botulism is one of the causes of bulbar paralysis, and must also be differentiated from poliomyelitis and encephalitis lethargica. It should be remembered that botulism, while a serious intoxication, fortunately is very rare, and is almost always associated with home processed foodstuffs. It need not be feared in fresh food or in food that has been recently and thoroughly cooked, for the toxin of botulism is destroyed at 70° C. Even if Mrs. T. had suffered from botulism, the spinach could not have been responsible, for it had been boiled just before the meal. The spinach certainly could not have conveyed the infection of cerebrospinal meningitis.

Food infections due to the Gaertner group of bacilli are exceedingly rare in the United States; outbreaks occur occasionally in England, and more commonly on the Continent. The food responsible for these infections becomes contaminated in one of several ways: (1) the food animal was diseased before slaughter with an infection of one of the members of the Gaertner group of bacilli. This occurs more often in Germany and in other countries where nothschlacht (emergency slaughter) is permitted; (2) food from healthy animals may become contaminated from the hands or instruments of butchers who have just handled an infected carcass; (3) food may be contaminated from a human carrier—this seldom occurs, for human carriers of bacillus are very rarely found; (4) the food may become contaminated with rat or mice feces, for these rodents are susceptible to infection by some of the members of the Gaertner group, and sometimes become bacillus carriers. Opportunity for food to become infected with excrement of mice and rats occurs in the slaughter house, in the butcher shop, in refrigerators, in transportation, and in the home.

Savage, in his recent book on "Food Poisoning and Food Infections,"[1] states that "the term 'ptomaine poisoning' is clearly incorrect, and its retention is unfortunate and misleading as it leads to a faulty conception of the pathology of the condition, and what is worse, to the neglect of the proper methods of investigation and prevention. It is to be hoped that it will speedily be relegated to the limbo reserved for unsubstantiated theories." Chapin, the distinguished health officer of Providence, R. I., states,[2] "there is almost as much nonsense written about 'ptomaine poisoning' as there is about adulteration. 'Ptomaine poisoning' is a popular name for disorders arising from bacterial changes in food. Of such we really know little except that they are not nearly so common as believed." These views confirm those of Jordan, who regards the term, "ptomaine poisoning," as a refuge for etiologic uncertainty; and also of Rosenau and his associates at Harvard who, after three years of study came to the conclusion that there is no such thing as "ptomaine poisoning."

The attending physicians in the Washington case deserve commendation for bringing in the aid of the laboratory to help unravel a clinical puzzle. In the recent Brooklyn cases diagnosed botulism, an autopsy was not obtained, and bacteriological information is wanting: the diagnosis will therefore remain uncertain. The literature on the subject of "ptomaine poisoning" is clogged with bazarre mistakes. Food poisoning in this country is rare, and the diagnosis is seldom justified unless other possibilities are considered and eliminated.

* * *

THE FELLOWSHIP OF MEDICAL AND POST-GRADUATE MEDICAL ASSOCIATION IN LONDON.

SOME account of the recent progress of the Fellowship of Medicine may be of value to the many American medical men who worked under the auspices of the new body during the summer of 1919, as well as to those who are contemplating an early visit to Europe.

The Fellowship was founded in July, 1918, at a meeting convened by Lord Eustace Percy with a view to establishing a body which might unite the British profession with their over-seas brethren in closer bonds of sympathy, Sir William Osler acting as President to the time of his death. During the last twelve months the organization of the Fellowship has been quietly proceeding, and the many opportunities for post-graduate study offered by London are being coördinated and added to. London and Greater London together comprise a population of over 10,000,000 persons, thus affording an amount of clinical material which for variety of interest cannot be surpassed by any other great city. The traditions of the London medical school and the standard of their teaching are second to none. For reasons, however, which are to some extent explained by national characteristics, the requirements of the medical post-graduate had never been adequately met. An unfortunate tradition had been established that medical London was inhospitable to the stranger. This tradition, which was true only in part, is now a legend of the past.

The arrangements in 1919 were frankly of an emergency nature; but, rudimentary as they were, two truths were driven well home. London could give post-graduate teaching of the highest distinction, and the medical men of the metropolis were ready to welcome very heartily their professional brethren from overseas. Today graduates are arriving in increasing numbers from all parts of the world. The American medical man, when he reaches London, will soon find himself at home. He possesses the advantage of having several centres where he can receive general advice and direction from his own countrymen as well as social and professional introductions which will make his path smooth. At the offices of the Fellowship of Medicine he can obtain detailed information with regard to every branch of medical and surgical study, particularly in relation to clinical work and intensive courses. If he subscribes to the monthly ticket of the Fellowship practically every door in medical London is open to him, and small additional fees will admit him to special lectures if they are not already free. American medical men who are considering the desirability of study in Europe are invited to apply for a post-free copy of the weekly Bulletin of the Fellowship, which provides a daily program of the work in the wards and out-patients' departments, together with a syllabus of each special course and list of all current lectures. The Fellowship also collates information of post-graduate work in the United Kingdom and in Paris, where a permanent branch is in course of being established. Correspondents should state the subjects they are interested in, and announcements of forthcoming arrangements will be forwarded from time to time. The offices of the Fellowship of Medicine and Post-Graduate Medical Association are at present in the House of the Royal Society of Medicine (by courtesy of the Royal Society of Medicine), No. 1 Wimpole Street, London, W.1., England.

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[1] Savage: "Food Poisoning and Food Infections," Cambridge University Press, 1920, p. 118.

[2] Chapin: Jour. A. M. A., lxix, 2, July 14, 1917, p. 90.

ORGANIZATION OF A MASSACHUSETTS CENTRAL HEALTH COUNCIL.

There has been organized recently in Massachusetts by the state-wide health agencies, a Massachusetts Central Health Council, for the purpose of promoting coöperation between the various health activities throughout the state. It is expected that by means of this organization duplication and overlapping of duties may be eliminated and that the financial and legislative needs of health agencies may be supported with increased efficiency.

The initial activities of the Massachusetts Central Health Council will be of an advisory nature. One of the first steps to be taken will be the outlining of the programs and problems of each of the constituent organizations, thus making it clear to each organization what the others are doing and propose to do. It is hoped also that coöperation and counsel may help to clarify the present confusion in regard to the respective duties of health officers and volunteer agencies. In the new organization are represented public health nursing, child welfare, medical and dental groups, tuberculosis, cancer, state and local health officials, the American Red Cross, and the American Public Health Association. Dr. Enos H. Bigelow, Framingham, is President of the Council; Mr. Arthur G. Rotch, American Red Cross, Boston, Vice-President; and Mr. A. W. Hedrich, American Public Health Association, Boston, Secretary-Treasurer.

MEDICAL NOTES.

Rockefeller Gift to University College, London.—The sum of six million dollars has been offered by the Rockefeller Foundation to University College and its Hospital and Medical School in London, to be used for teaching and research work. The gift involves certain conditions, including the building of a new obstetrics unit, a biochemical laboratory, the rebuilding of some of the hospital buildings, and the establishment of various endowments. In addition, a new institute of anatomy is to erected, which it is hoped may be the finest in the world. The hospital must raise an additional sum of one hundred thousand dollars annually to carry out the program. The institution depends for support upon voluntary contributions. The hospital has accepted its share of the gift, but the college must obtain the sanction of the London University, in which it was incorporated in 1907, before accepting.

A statement issued by Dr. George E. Vincent includes the following extracts:

"The University College and Hospital School have been selected because of the physical unity of the hospital and medical school buildings and the close relationships existing between the University College, which provides the laboratory courses, and the University College Hospital and Medical School, which furnishes clinical teaching.

"The authorities of the schools, supported heartily by the faculty, have organized full-time clinical 'units' in such a way as to combine the care of patients and research with the teaching of students. This feature of the work especially influenced the Foundation to decide to assist in furthering a plan which it is believed will have an important effect upon the development of British medicine.

"The Foundation has a special interest in the proposed Institute of Anatomy because thus far under British auspices a true university department which combines both teaching and research in the fields of anatomy, histology, and embryology has not been developed. It is believed that such an institute, by unified efforts in these three branches of anatomy, is of prime importance not only to the teaching of the medical student but also for the progress of anatomy, particularly on its research side."

NUTRITION CLINICS IN CLEVELAND.—The Cleveland Nutrition Clinics have been organized recently in association with the Nutrition Clinics for Delicate Children in Boston. The activities of the new society are directed especially toward the public schools, and training will be given under its auspices next year to the students in the city normal school.

An intensive course for nutrition workers had its beginning June 21, in the Cleveland Summer School of Education, of which Dr. Ambrose L. Suhrie is dean. Dr. Wm. R. P. Emerson was present during the first week and emphasized the importance of training physicians for nutrition work. The two following weeks stress was laid upon the training of nutrition workers. Among the instructors is Miss Mabel Skilton of Boston, who has charge of field work in the national association, and Mrs. Ira Couch Wood, director of the McCormick Memorial Fund in Chicago.

In planning for an extensive campaign in the schools the coming year a number of workers from Cleveland spent several days in Boston recently. Among them were Dr. L. W. Childs, director of medical work for the Cleveland Board of Education; Dr. H. C. Mabley, in charge of open air schools, and Miss Mabel Southard, head nurse in the department of school inspection. They visited nutrition clinics at the Berkeley Infirmary, the Massachusetts General Hospital, and the Elizabeth Peabody House, and gave considerable time to the pioneer nutrition experiment undertaken by the School Committee at Walpole, where every child in the schools has been weighed and measured and clinics have been provided for all children in need of care. This work is in charge of Miss Mae Chamberlain, formerly of the Bureau of Child Hygiene in New York. Miss Chamberlain returned last fall from service in France and took training for nutrition work in the Boston class.

TUBERCULOSIS RESEARCH FELLOWSHIP.—To encourage study of the means for the prevention and cure of tuberculosis, the Hennepin County Tuberculosis Association of Minneapolis, Minnesota, announces that it has set aside a fund for the support of a tuberculosis research fellowship in the Graduate School of the University of Minnesota. The candidate for the fellowship must be a graduate of a Class A medical college. He will be expected to devote himself to research in some problem concerned with the causes, prevention, or cure of tuberculosis. No teaching or other service will be required. The fellowship yields $750 the first year and progressively increasing amounts to be appropriated for the second and third years as conditions warrant. Inquiries and requests for application blanks should be addressed to the Dean of the Graduate College, University of Minnesota, Minneapolis, Minn.

YALE UNIVERSITY AND THE NEW HAVEN GENERAL HOSPITAL.—The sum of one million dollars has been given by the General Education Board to Yale University for the development of the New Haven General Hospital through the medical school of the university. When the Yale Medical School became affiliated with the New Haven Hospital a few years ago a gift of five hundred thousand dollars was made by the General Education Board. The hospital is to be made a full-time institution, and members of the staff, many of whom are members of the Yale Medical School faculty, are to give all their time to the hospital and give up outside practice.

BRITISH AND FRENCH PHYSICIANS IN THE UNITED STATES.—The following British and French physicians attended the meeting of the American Medical Association at New Orleans and have been visiting the leading medical centers of this country as guests of the National Board of Educational Examiners of the United States:

Sir Humphrey D. Rolleston, Royal College of Physicians of London; Col. H. J. Waring, Royal College of Surgeons of London; Dr. Norman Walker, Royal College of Physicians of Edinburgh and the Royal Faculty of Medicine and Surgery of Glasgow, and Professors Gustave Roussy and E. E. Desmarest, of the University of Paris.

Honor for Dr. Aldo Castellani.—The honor of Officer of the Legion of Honor has been conferred by the president of the French Republic on Dr. Aldo Castellani, of the London School of Tropical Medicine, in appreciation of his method of combined typhoid-paratyphoid and enteric-cholera vaccination.

New Treatment for Leprosy.—The United States Public Health Service has reports of what appears to be a cure for leprosy, it has been announced by Surgeon-General Hugh S. Cumming. Thus one of the world's most dreaded maladies regarded as a hopeless and incurable scourge of humanity since early history, would seem to have been conquered at last by the Public Health Service in the leper colony in the Hawaiian Islands.

For some years the belief has been gaining ground that leprosy could be cured, and encouraging progress was made by several investigators. The starting point for this study was the observation that now and then the course of disease appeared to be favorably influenced by treatment with chaulmoogra oil. The treatment, however, was attended with many difficulties and could not be carried out in all cases. At this point the Public Health Service enlisted the coöperation of Prof. L. E. Dean, head of the chemical department of the College of Hawaii, and president of that institution, suggesting that attempts be made either to isolate the active constituent of this drug, or to devise means for making its continued administration feasible. The latter has been accomplished by preparing what is known as an "ethyl ester" from the chaulmoogra oil. The treatment has been carried on at the Leprosy Investigation Station at Kalihi, Hawaii, the work being directed by Dr. J. T. McDonald, director of the station. The results of the treatment thus far have been so satisfactory that lepers come willingly for treatment, a recent inspection by Hawaiian health authorities failing to disclose a single secreted case of leprosy. Following a course of treatment, extending over about a year, 48 lepers, treated according to the new method, were paroled in October, 1919. Up to now they have remained free from disease. At the present time the treatment has been administered only at the receiving station but it is hoped to provide facilities for the treating also of lepers in the leper colony at Molokai.

Surgeon-General Cumming's announcement relates to lepers who have been treated by the new method and have been under observation for a considerable period. Moreover, the decision as to apparent cure has in the case of each patient been officially determined, not by officers of the Public Health Service, but by a special parole board, which alone has authority to discharge a patient from custody.

The Public Health Service is now conducting a very careful study of the treatment, making detailed records of all the cases and taking photographs of the lesions once a month. Details concerning the treatment will be published later.

BOSTON AND MASSACHUSETTS.

Convention of the Northeastern Massachusetts Dental Society.—The Northeastern Massachusetts Dental Society held its annual convention on June 15, 16, and 17 at the New Ocean House, Swampscott. Dr. A. A. Nouel, Professor de Clinica Dental, de la Universidad Central de Venezuela, delivered an address on "Electrical Modalities for the Treatment of Pyorrhea," and a clinic was given on the metallizing of dental pulps and nerve canal treatment with high frequency electric currents. Other speakers made addresses on the following subjects: Dr. P. B. Laskey of Marblehead, "Something of Interest"; Dr. John A. Billings, Rockland, "Amalgam Restorations"; Dr. C. B. Vaughn, Boston, "Pyorrhea"; Dr. Charles S. Campbell Salem, "Comparative X-ray"; Dr. W. H. Pepin, Lowell, "Orthodontia Appliances"; Dr. Edmund A. Jones, Medford, "Technic of Boxing and Using Goslee Contraction and Expansion of Solder and How to Eliminate the Same."

Speakers at the dinner on June 15 included William Rice, dean of the Tufts Dental School; Eugene H. Smith, dean of the Harvard Dental School, and Harold DeWitt Cross, superintendent of the Forsyth Infirmary. An entertainment and dance were given in the evening.

For the coming year the following officers were elected: President, Dr. H. E. Davis of Lowell; vice-presidents, Dr. E. W. Marvin of Lynn, Dr. M. E. Davenport of Beverly, Dr. F. E. Jeffrey of Salem and Dr. W. A. Peppin of Lowell; secretary, Dr. Henry I. Yale of Peabody; treasurer, Dr. T. F. Parks of Wakefield.

WEEK'S DEATH RATE IN BOSTON.—During the week ending July 3, 1920, the number of deaths reported was 184 against 155 last year, with a rate of 11.87 against 10.15 last year. There were 29 deaths under one year of age against 21 last year.

The number of cases of principal reportable diseases were: Diphtheria, 46; scarlet fever, 39; measles, 58; whooping cough, 71; typhoid fever, 2; tuberculosis, 36.

Included in the above were the following cases of non-residents: Diphtheria, 5; scarlet fever, 6; measles, 2; whooping cough, 1; tuberculosis, 4.

Total deaths from these diseases were: Diphtheria, 6; scarlet fever, 1; whooping cough, 1; tuberculosis, 4.

Total deaths from these diseases were: Diphtheria, 6; scarlet fever, 1; whooping cough, 5; typhoid fever, 1; tuberculosis, 13.

Included in the above were the following non-residents: Diphtheria, 3; whooping cough, 1; tuberculosis, 2.

THE EUGENE H. SMITH SCHOLARSHIP FUND.—At the forty-ninth annual dinner of the Harvard Dental Alumni Association held at the Copley-Plaza Hotel in Boston, Dr. Henry W. Gillet of New York presented to Dr. Eugene H. Smith, who has served as Dean of the Harvard Dental School for twenty-five years, an album containing the signatures of the first subscribers to the scholarship fund which is being raised in his honor. Contributions amounting to twenty-five hundred dollars have been pledged to the fund. Among the speakers who paid tribute to Dean Smith and his work for the college and for dental education were Dr. Charles W. Eliot, President Emeritus of Harvard University; Dr. Frederick B. Moorehead, Dean of the Dental Department of the University of Chicago; Professor Walter Bradford Cannon of the Harvard Medical School, and Dr. William Rice, Dean of the Dental Department of Tufts College.

The following officers of the Harvard Dental Alumni Association were elected for the coming year: President, Samuel T. Elliott, '01; Secretary, James T. Crofwell, '99; Treasurer, Roger B. Taft, '08; Trustee of Life Membership Fund, Lyman Bigelow, '86; Member of Executive Committee, H. L. Andrews, '06; Committee on Nominations and Election of Officers, Fred A. Beckford, '06; Walter A. Davis, '01, and J. Arthur Furbish, '05.

DRUG PRICE CHANGES.—The Drug and Chemical Markets have made the following announcements for the week of June 24: Declines in prices have outnumbered the advances in the crude drug market and the losses give an appearance of a depression in the market. Shipments from abroad have been large, and domestic receipts have increased, but the collections are not overabundant. Stocks of buchu in the New York market have been exhausted and none is to be had at Cape Town. Spanish saffron is easier. Chamomile flowers are arriving in large quantities and prices are lower. High dried rhubarb has declined. Senega root is easier. Agar agar is lower.

Glycerine is strong. Quicksilver is lower in New York than in London. Caffeine alkaloid is scarce and prices are firm. Quinine is weak, owing to large arrivals. Citric and tartaric acid are lower. Caramel is scarce and in active demand. The general situation in fine chemicals is steady with little trading.

Naphthalene is scarce and high. Dimethylaniline is firm. Aniline oil and salt continue weak.

Essential oil prices declined. Far East products are lower with the exception of sandalwood oil. Anise and cassia oil are weak and clove oil is easy. The Messina essences are quiet.

The vegetable oil market reported reductions. Cottonseed oil weakened slightly. Cocoanut and palm oils are lower. Soya bean oil fluctuated and finally regained some of the loss of the week before. Linseed oil is weaker.

Bleaching powder and caustic soda are strong and slightly higher. Salt cake is scarce and prices have been advanced. Sodium hyposulphite is higher. Ammonium sulphate and potash muriate are lower. The general situation in heavy chemicals is practically unchanged.

DEPARTMENT OF PUBLIC HEALTH.—Announcement has been made of the following changes in personnel in the Massachusetts Department of Public Health:

Dr. M. J. Rosenau has resigned as Director of the Division of Biologic Laboratories, effective June 1, 1920, but will continue to be connected with the Department as Consulting Pathologist and Bacteriologist.

Dr. G. Benjamin White has been promoted from the position of Assistant Director of the Division of Biologic Laboratories to Director of the Division of Biologic Laboratories, commencing June 1, 1920.

Dr. Stanley H. Osborn has resigned as Epidemiologist with this Department, effective May 1, 1920, to accept a position as Director of the Division of Preventable Diseases and Deputy Commissioner of the Connecticut Department of Health.

Dr. James E. Henry has been temporarily appointed as Epidemiologist, commencing June 1, 1920.

BOSTON STATE HOSPITAL TRAINING SCHOOL FOR NURSES.—The graduating exercises of the Boston State Hospital Training School for Nurses were held for the class of 1920 on June 25 at the Chapel of the Boston State Hospital, East Group. An address was delivered by Dr. Elisha H. Cohoon, Superintendent of the Medfield State Hospital. Eleven young women and one man were graduated. The exercises were followed by a reception and dancing.

NEW ENGLAND NOTES.

WAR RELIEF FUNDS.—The New England branches of the French Orphanage Fund and the Italian Fund have announced the following contributions:

French Orphanage Fund	$602,171.71
Italian Fund	329,494.21

Obituary.

CHARLES DANIEL McCARTHY, M.D.

DR. CHARLES DANIEL McCARTHY died at his home in Malden, June 22, 1920, aged 59 years.

Dr. McCarthy's death was due to a stroke of apoplexy which he suffered June 17, soon after arriving at the Lynn Hospital, where he was to perform an operation. He was removed from the hospital to his home the following day, but did not regain consciousness after he was stricken.

Charles D. McCarthy was born in Lee, in the Berkshires on July 3, 1860, and was the son of John D. and Jane (Ferguson) McCarthy. He received his education in the public schools in Lee and at Holy Cross College, of which he was a graduate with the class of 1880. He then took up his medical studies at New York University, graduating M.D. in 1882, and later went to Malden. He had become known as a physician of marked ability and as a surgeon of recognized skill and authority.

Dr. McCarthy was one of the founders of the Malden Hospital, and he was its senior staff surgeon. He served on the Board of Health in Malden from 1886 until 1907, in which latter year he was elected mayor. He served for only a single term, however, and declined a reëlection because he preferred to give his whole time to his profession. When Malden celebrated her 250th anniversary Dr. McCarthy was chairman of the emergency committee. He was sought as an orator for many public occasions.

He joined the Massachusetts Medical Society in 1886: at one time he was president of the Malden Medical Society. He was one of the founders and first grand knight of the Santa Maria Council of the Knights of Columbus, and belonged to various other similar organizations. He was a director of the First National Bank of Malden, also of the Malden Coöperative Bank and of the Malden Morris Plan Bank.

Dr. McCarthy was married on February 13, 1890, to Mary Elizabeth Sheehan, by whom he is survived, as he is also by a son, Dr. Charles D. McCarthy, Jr., and a daughter, Mrs. Margaret McCarthy Stephanian of Malden. The son, Dr. McCarthy, Jr., was in war service overseas, and won the Cross of the Legion of Honor. A surviving brother of Dr. McCarthy is Dr. John C. McCarthy of New York.

RECENT DEATH.

DR. CHARLES CARSON MESSER, a Fellow of the Massachuetts Medical Society, died at his home in Turner's Falls, May 20, 1920. He was born in Springfield, N. H., Dec. 25, 1853, was graduated at Dartmouth Medical School in the class of 1880, and had practised in Turner's Falls since 1883. He was a member of the American Medical Association.